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Applying the "Principles of War" to Cruise Missile Defense

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College, the Department of the Army, or the Department of the Navy.

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The Joint Chiefs of Staff (JCS) has elected to include cruise missiles under the umbrella of theater missiles. Joint Publication 3-01.5, "Doctrine for Joint Theater Missile Defense," is the principal source for planning and executing cruise missile defense. Service doctrine is also relevant since Joint Pub 3-01.5 permits each component commander the freedom to use his respective services' doctrine when conducting defensive operations within his Area of Responsibility (AOR).

When examining each of these documents we find that significant progress has been made since the end of the Gulf War. The *objective* of our defensive strategy has been clearly defined. Service doctrine addresses this *objective* by capitalizing on *maneuver* to *surprise* the enemy and limit his ability to influence our operations with cruise missiles. However, our command and control structure, along with a reluctance to place assets of one service under the command of another component commander, prevents us from achieving the proper application of *mass* and *economy of force*.

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ABSTRACT

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The U.S. military must assume its future adversaries will possess arsenals that include sophisticated cruise missiles capable of being launched from multiple platforms and engaging both land and sea targets. Having the appropriate force structure and doctrine to counter this threat may mean the difference between victory and defeat. The adequacy of our existing doctrine, rather than the effectiveness of our current force structure, is the focus of this paper. Using the "*Principles of War*" as measures of effectiveness, analysis shows that our current doctrine fails to optimize cruise missile defense capabilities at the operational level of war.

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INTRODUCTION

In the past decade, each of our Armed Services has wrestled with the perplexities of cruise missile defense. While the Navy was the first to address the vulnerability of her sailors and ships to this weapon, the Army, Marines, and Air Force have all added systems to their respective inventories capable of countering a cruise missile. With these weapons came the associated Tactics, Techniques, and Procedures (TTPs) that eventually matured into both Service and Joint Missile Defense Doctrine. This paper will address the adequacy of this doctrine, not the effectiveness of our weapon systems, in addressing this rising threat. Using the "*Principles of War*" as measures of effectiveness, it becomes evident that existing doctrine fails to optimize cruise missile defense capabilities at the operational level of war. Prior to conducting this analysis, one must first gain a general understanding of both the threat and our doctrine.

CRUISE MISSILE PROLIFERATION

America's decisive victory in the Gulf War over a numerically superior enemy can be attributed to many factors. While I support the school of thought that suggests our professional force of volunteer soldiers, sailors, airmen, and marines ultimately secured victory, one cannot argue the significant role technology played in Iraq's defeat. General Schwarzkopf stated, "our superiority in precision munitions (to include cruise missiles), stealth, mobility and command, control, communications, and computers proved to be decisive force multipliers."[1] The display of technologically advanced weapons, shown throughout the world via real-time media coverage, not only amazed the American public and her allies but also served as a wakeup call for our future adversaries. While the significant costs associated with procuring many of these systems places them beyond the

reach of most of the world's nations, this is not true with cruise missiles. "Since the success of the Tomahawk in the Gulf War, proliferation of cruise missile technology, including land attack cruise missiles has skyrocketed." [2] The technologies rendering the cruise missile a highly survivable and lethal weapon were once the sole province of America and a select few developed states. As of February 1997, at least 73 countries where assessed to have some form of cruise missile system.[3] Approximately 100 different types of cruise missiles are now being produced all with ranges in excess of 150 kilometers. Even though most of these systems do not currently possess the level of technological sophistication as our own, there is little doubt that such levels are achievable by even developing nations in the near future.

Impact of Cruise Missile Proliferation

In the Gulf War, Iraq's SCUDs presented Coalition Forces with a threat they were ill prepared to counter. Joint Doctrine addressing Theater Missile Defense had not been developed. The Coalition's only defensive weapon system capable of destroying an inbound SCUD was the Patriot and this system was both limited in number and designed primarily to counter enemy aircraft. These shortfalls were the result of many failures by military planners, most importantly the failure to distinguish the strategic and operational impact of Theater Ballistic Missiles (TBMs). SCUDS were viewed as just another means of delivering ordnance on a target, much like conventional artillery, requiring no additional countermeasures. Iraq's SCUD attacks may have been tactically insignificant, but the strategic and political implications of their use quickly pointed out the folly of such logic. While Iraq only launched a total of 88 missiles at Saudi Arabia and Israel, 60 percent of which were launched during the first 12 days of the war, SCUD hunting

represented approximately 6% of the average daily strike air sorties (5,306 sorties between 17 Jan and 28 Feb).[4] After the war, General Horner, the Joint Force Air Component Commander, remarked that he had devoted a greater proportion of thought and attention to hunting SCUDS than to any other mission.

This lesson learned drove rapid improvements in both our Theater Missile Defense Doctrine and our defensive capabilities against the TBM threat. Each of our Services has made significant progress in procuring and fielding systems capable of countering both the theater ballistic missile and cruise missile threats. Unfortunately, the collective defensive potential of these systems will not be realized due to the lack of a viable joint doctrine governing their employment. Just as we did with TBMs prior to the Gulf War, we once again have failed to recognize the unique challenges posed by cruise missiles and elected to address our planned response to this threat under the broad umbrella of our current Theater Missile Defense Doctrine. Our assessment of that doctrine begins with a brief review of existing Joint Publications and each of the Services' doctrinal references.

CURRENT JOINT DOCTRINE

Joint Publication 3-01.5, "Doctrine for Joint Theater Missile Defense," is the principal source for guidance on planning and conducting defense against the cruise missile threat. It was published in 1996 under the direction of the Chairman and sets forth doctrine and selected joint tactics, techniques, and procedures (JTTP) to govern the joint activities of U.S. Armed Forces.[5] The document attempts to fill the "doctrinal void" that existed during the Gulf War by providing combatant commands, subunified

commands, joint task forces and subordinate components of these commands the guidance needed to plan and execute theater missile defense operations.

Rather than cover ballistic missiles, cruise missiles, and air-to-surface missiles separately, the authors of Joint Pub 3-01.5 elected to collectively address these systems as "theater missiles (TMs)" thus the term Theater Missile Defense (TMD). According to the publication, "Joint TMD refers to the integration of joint force capabilities to destroy enemy theater missiles in flight or prior to launch or to otherwise disrupt the enemy's theater missile operations through an appropriate mix of mutually supportive passive missile defense, active missile defense, attack operations, and supporting command, control, communications, computers, and intelligence (C4I) measures."[6] To accomplish this, the combatant commander establishes theater guidance and assigns and/or apportions forces and resources. The Joint Force Commander (JFC) is responsible for developing a concept of operations that specifies objectives and provides guidance for employment of TMD systems. The Area Air Defense Commander (AADC) is normally assigned the overall responsibility for air defense to include TMD within the theater. When a Joint Force Air Component Commander (JFACC) is established, he is given the responsibility of planning and executing TMD attack operations outside the other component commander's areas of operation. Ultimate responsibility for the execution of all Joint TMD Operations, within their respective area of operations, remains with the component commanders as it did during the Gulf War. Each component commander remains free to execute his respective services' doctrine to execute this mission.

While Joint Pub 3-01.5 states the successful conduct of theater air defense requires the integration of all available air defense weapon systems of all components, it

fails to provide the AADC with the level of control to ensure this takes place. Instead, procedural methods such as the assignment of areas of operations and the designation of engagement areas along with coordination between component staffs are relied upon to achieve this objective.

SERVICE DOCTRINE

It is not surprising that each of the services view TMD Operations along the same lines as they view warfare in general. The Army, with the predominance of the ground forces, views the protection of those forces by its surface-to-air assets a top priority. Navy TMD assets remain focused on protection of the fleet and the Air Force seeks to counter the threat by dominating the enemy's air space.

The Army views TMD and theater counterair operations as two separate missions. "Counterair targets include manned aircraft and unmanned aerial vehicles (UAVs) while TMD targets are comprised of ballistic, cruise, and air-to-surface missiles. Operations to protect the force from theater missiles differ fundamentally from those actions taken to defend against the counterair threat."[7]

Navy doctrine integrates its air, surface, and subsurface warfare areas through its Composite Warfare Commander (CWC) concept. Under the CWC concept, the Antiair Warfare Commander (AAWC) is responsible for all Navy antiair warfare operations, including active defense against TMs while the Strike Warfare Commander (STWC) is responsible for attack operations against TM targets.[8]

The Air Force makes no distinction between types of air threats. "The aircraft and missile threat may include fixed and rotary-wing attack aircraft, reconnaissance aircraft, unmanned aerial vehicles, air-, land-, and sea-launched cruise missiles, and air-

to-surface missiles."[9] The Air Force further divides its counter-air operations into offensive and defensive operations. Given the inherently offensive nature of its assets, the Air Force favors aggressively seeking out and destroying enemy targets prior to their employment. Should this fail, the Air Force is prepared to detect and identify inbound enemy targets and has systems fielded that can intercept and destroy each with the exception of a tactical ballistic missile. "Essential to the Air Force's doctrine is the tenet that the entire offensive and defensive counterair efforts should be controlled by one air officer exercising the centralized control, decentralized execution concept."[10]

Each of the services' doctrine adequately addresses the defense of their respective assets from cruise missile attack, but collectively do they provide the synergy required to optimize that defense at the operational level of war? The fact each component commander remains free to execute their services' doctrine within their own AOR calls the collective value of their defensive efforts into question. Using the "Principles of War" as the basis for our analysis, we will attempt to answer this critical question. These principles provide us a framework to assess any planned military operation including cruise missile defense. While the principles are not intended to be checklist requiring strict adherence, it is generally accepted that should a commander decide to disregard any of them there is an associated risk with that decision. The nature of the operation influences the relative weight associated with each of the principles along with risk associated with its disregard.

PRINCIPLES OF WAR

OBJECTIVE: "To direct every military operation toward a clearly defined, decisive, and attainable objective."[11]

In Chapter I of Joint Publication 3-01.5 the authors list our Joint Theater Missile Defense Objectives. (A complete list can be found at Appendix A). This in itself represents a significant improvement over our planning prior to the Gulf War when the missile threat was subjectively minimized and included as subsets of other defensive planning. The doctrine further directs joint force commanders to supplement these general objectives with specific guidance contained in his/her concept of the operation. This guidance should include the prioritization of U.S. and multinational forces, critical assets, and areas of vital interest or political importance that are to be covered by missile defense assets. This level of guidance, found in our existing doctrine, should be sufficient for operational level commanders to insure the principle of *objective* is appropriately addressed in future planning and in my opinion requires no further refinement.

OFFENSIVE: "To seize, retain, and exploit the initiative."[12]

While the link between the principle of *offensive* and cruise missile defense may not be evident to the casual observer, it does apply in the execution of attack operations. Both the Air Force and the Army have developed TTPs that address preventing the launch of enemy missiles from occurring by attacking each element of the overall system. Launch platforms, targeting assets, missile stocks, and infrastructure are all aggressively engaged throughout the operation to limit the enemy's ability to launch cruise missiles. Based on existing doctrine, the JFACC is normally assigned the responsibility for maintaining visibility on the Joint Operations Area (JOA)-wide attack operations effort.[13] This level of visibility is designed to facilitate the requested assistance by another component commander to service a target within that commander's area of operation.

While this procedure may be adequate for servicing stationary sites, such as missile storage sites or production facilities, it contains serious flaws when addressing time sensitive targets such as mobile cruise missile launch platforms. The level of connectivity and synchronization between separate component headquarters necessary for the rapid deconfliction of fires servicing these time sensitive targets does not currently exist. Meaning that should a soldier or sensor locate a target that is within the land component commander's AO, but not serviceable by that component's weapon systems, we may lose the ability to "retain" and "exploit" that advantage.

MASS: "To concentrate the effects of combat power at the place and time to achieve decisive results."[14] ECONOMY OF FORCE: "To allocate minimum essential combat power to secondary efforts."[15]

Mass and *Economy of Force* have been combined in this discussion due to their inherent interaction when attempting to design the optimal cruise missile defense plan. In order to concentrate limited theater assets to achieve decisive results against cruise missiles one must shift assets from less vulnerable and secondary efforts. While our doctrine does give the JFC commander the authority to apportion component capabilities to the JFACC for counterair and missile defense, this has been the exception rather than the rule in previous conflicts. When reviewing the task organization for the Gulf War, as directed by the Desert Storm Operations Plan, one quickly realizes no Army air defense assets were OPCON to the JFACC. In his role as the AADC, the JFACC did exercise procedural control over all air defense systems in theater, to include declaring weapon control status and air defense warning levels, but he did not position or assign missions to all those forces. The level of coordination between the JFACC and Deputy Land Component Commander (DLCC) on positioning and mission assignment to the Army's

Patriot units was significant; however, this was not the case for the Army's divisional air defense assets which are capable of countering cruise missiles. Granted, the Iraqis posed no serious cruise missile threat to allied ground forces, but if we face an adversary in the future that does possess this capability such an arrangement may prove disastrous.

To achieve *mass* at the decisive point we must be willing to divert forces, without regard to component propriety, from what we determine to be *economy of force* efforts less we forget Fredrick the Great's advice, "he who defends everything, defends nothing." Obviously this assignment of priority requires an extensive mission analysis, to include the enemy's capabilities and intentions for the use of their cruise missiles along with a determination of our own critical vulnerabilities. Once this has been determined, all assets should be brought to bear on defending those vulnerabilities. *Economy of force* elements may be required to relay solely on passive defense measures, such as camouflage, hardening, and dispersal to enhance their own survivability. If this analysis determines our divisional maneuver units are not as vulnerable or less critical to overall mission success as are assets in the JFACC's AO, the CINC should exercise his combatant command (command authority) (COCOM) and attach Army Short Range Air Defense (SHORAD) assets to the JFACC. Similarly, if a port facility within the LCC's area of operation is assessed as critical to mission success and vulnerable to cruise missile attack, the LCC should allocate divisional assets to its defense or the CINC may consider placing a Navy Aegis system OPCON to the LCC in order to achieve *mass*.

Today's doctrine does not prohibit obtaining *mass* and *economy of force*. The CINC exercising his COCOM through his JFC is capable of achieving this goal. He will,

however, face considerable opposition from the Services based on the perceived misallocation of their respective resources.

UNITY OF COMMAND: "To ensure unity of effort under one responsible commander for every objective."[16]

Joint Publication 3-01, Joint Doctrine for Countering Air and Missile Threats, states that "theater missile defense is inherently a joint mission"[17] yet nowhere are the shortcomings of our current doctrine more evident than when assessing its adherence to the principle of *unity of command*. As previously mentioned, the JFC is responsible for establishing guidance and objectives for joint theater missile defense. Rather than assigning the responsibility for accomplishing these objectives squarely with one of the component commanders, doctrine requires each component commander to synchronize cruise missile defense operations within their respective AOs. Given a perfect world, each of these component commanders would view the cruise missile threat equally and work together to ensure all critical theater assets were sufficiently covered. Given the differences in service doctrine along with competing demands on assets this desired result seems unlikely. To establish true *unity of command*, one component commander should be given the responsibility for planning and executing all four pillars (attack, active, passive, and C4I) of the missile defense plan for the entire JAO. However, given the current level of connectivity between component headquarters this may not be desirable.

To explore this further, let us assume the JFC gave this responsibility to the Naval Component Commander (NCC). While executing his duties, the NCC may wish to direct an attack against a cruise missile platform positioned on a bridge within LCC's AOR. Given unchecked authority to conduct such an attack, the NCC may not only destroy the

cruise missile target but also the bridge which could play an essential role in the LCC's scheme of maneuver for future operations.

While consolidating responsibility under one component commander for all aspects of missile defense planning is not possible at this time, it is not only possible but desirable to do this for "active defense." Since active defense is the engaging of inbound missiles by all means available throughout the entire flight,[18] placing this operation under one commander is entirely possible without impacting on the operations of other component commanders. The only possible concern would be fratricide of friendly cruise missiles; however, since friendly cruise missile missions are planned well in advance, procedural control measures could be enacted to prevent a mishap. In fact, the placing of all defensive assets under one command would in fact reduce the risk of fratricide by reducing the number of headquarters that are required to process and pass information on to subordinate fire units.

SIMPLICITY: "To prepare clear, uncomplicated plans and concise orders to ensure understanding."[19]

Streamlining the chain of command for cruise missile active defense assets, as recommended in the paragraph above will be a significant step in bringing *simplicity* to future operations. Also, permitting these assets to focus on cruise missile defense as their primary mission, rather than a secondary task, will help ensure understanding down to the firing unit level.

SECURITY: "To never permit the enemy to acquire unexpected advantage."[20]

The goal of operational *security* is to reduce the vulnerability of our forces to hostile acts, influence, or surprise. Knowledge and understanding of enemy strategy, tactics, and doctrine are essential for planning adequate security measures.[21] This

planning begins with the formation of our doctrine and continues throughout the operation. Prior to the Gulf War, U.S. planners failed to realize the significant role Theater Ballistic Missiles (TBMs) could play in a potential adversary's strategy. As a result, doctrine to counter this threat was not developed and the operations plan for Desert Storm did not even devote an annex to the subject. Component commanders also elected to treat TBMs as simply another delivery means for ordnance. This planning failure increased both the vulnerability of our forces and also our strategy to maintain a strong coalition against Iraq.

Today's doctrine does not adequately protect us from a reoccurrence of this failure. Rather than addressing cruise missiles as a unique weapon, doctrinal planners have decided to include them as a subset of the theater ballistic missile threat. Unfortunately, just as TBMs were not just another delivery means for ordnance so do cruise missiles differ from TBMs. Most significantly, their launch is not visible from space based sensors, thereby making early warning more challenging. Additionally, their lower cost can result in a threat that is more significant numerically. A smaller logistical tail permits cruise missile platforms to be more mobile and their operating procedures allow them to remain electronically quiet.[22] These differences place the cruise missile in a class of its own as a significant threat to future operational *security* and as such require specific doctrine along with Joint TTPs.

Some may view this paper's earlier recommendation to attach Army Divisional SHORAD units to the JFACC in order to achieve *mass* as a violation of the principle of *security.* This thought process does not take into consideration that achieving *security*

does not mean the elimination of risks. On the contrary, "to be successful, commanders must take necessary, calculated risks to preserve the force and eliminate the enemy."[23]

SURPRISE: "To strike the enemy at a time or in a manner for which it is unprepared."[24]
MANEUVER: "To place the enemy in a position of disadvantage through the flexible application of power."[25]

The remaining two principles of war, *surprise* and *maneuver,* impact on attack operations. Existing doctrine facilitates the maneuver of our ground, air, and naval assets to obtain surprise over the enemy and ensure victory. This is also true for assets conducting attack operations against cruise missiles. Although the cruise missile platform remains a difficult target to track, technical improvements on existing sensors along with the influx of new sensors, such as unmanned aerial vehicles, have reduced the enemy's ability to hide. Improvements in C4I have also reduced the sensor-to-shooter timelines, allowing us to hit the enemy before he has the time to react. Still further improvements are required to streamline the deconfliction process for targets within one component commander's AO by another component command. As discussed earlier, the doctrine requiring this deconfliction is sound; however, time for its execution may compromise the element of *surprise*.

CONCLUSION

In March of 1999, the Government Accounting Office (GAO) submitted a report to Congress titled "Cruise Missile Defense: Progress Made but Significant Challenges Remain." After completing this review of our current doctrine addressing the cruise missile threat at both the joint and service level, I fully concur with the GAO's assessment. There is no doubt we are better prepared to address this threat than we were prior to the Gulf War. The emerging doctrine, based on the lessons learned from that

campaign, clearly delineates the *objective* of our theater missile defense forces. To achieve this *objective* the Services have increased their defensive capabilities and developed TTPs on attack operations that capitalize on *maneuver* to *surprise* the enemy and limit his ability to influence our operations. Each of these measures has served to enhance the *security* of our operational forces, but we still have not optimized the level of protection that is achievable.

Joint Vision 2020 states: "Innovation, in its simplest form, is the combination of new 'things' with new 'ways' to carry out tasks."[26] Each of our services has been very willing to allocate resources to procure new systems/things to counter cruise missiles but the long-standing "roles and missions" debate has prevented them from enthusiastically embracing new ways to accomplish this mission. One result of this mindset is the failure to recognize cruise missiles as a separate threat unique to other theater ballistic missiles. This failure may be critical as the cruise missile threat matures and eventually surpasses the TBM as the most prevalent surface-to-surface missile on the battlefield. An enemy that builds his strategy around the employment of cruise missiles, as Saddam Hussein did with the SCUD, may be able to achieve an unexpected advantage at either the operational or strategic level of war.

New ways also includes addressing organizational structures along with command and control relationships. The Services have made great strides in enhancing our ability to conduct active defense operations by improving interoperability among their respective missile defense forces through participation in joint exercises along with actual deployments. Common data and communications protocols permit the rapid dissemination of target data across the battlefield. While the level of protection afforded

our forces has been significantly increased by these active defense efforts, it has not been optimized. This will only occur when the effort is centralized under one component commander within the JAO thereby ensuring *unity of command*. Cultural walls, which resist the attaching of one service's assets to the component commander of different service, must be torn down; unfortunately, existing doctrine only serves to reinforce these walls. Given the potential for cruise missiles becoming the dominant threat to our success in future operations, the Services must be dedicated to achieving *mass* at the critical point of our defense even if this requires cross-task organizing. Only when our doctrine is modified to require this will we optimize our defensive capabilities and achieve the inherently joint nature of cruise missile defense required to guarantee victory.

JOINT THEATER MISSILE DEFENSE OBJECTIVES[27]

- To demonstrate US resolve to deter aggression through the establishment of a theater missile defense capability.
- To protect US-deployed and multinational forces as well as critical assets and areas of vital interest or political importance from attack by theater missiles.
- To detect and target theater missile systems; to detect, warn, and report a theater missile launch; and to coordinate a multifaceted response to a theater missile attack while integrating that response with other combat operations.
- To reduce the probability of and/or minimize the effects of damage caused by a theater missile attack.
- To ensure that the joint force commander has the freedom to conduct joint operations without undue interference from theater missile operations conducted by the enemy.

NOTES

[1] Joint Chiefs of Staff, Doctrine for Countering Air and Missile Threats, Joint Publication 3-01 (Washington, DC: Oct 99), II-1.

[2] Col Allen McDavid and Capt Brian Bosworth, "Cruise Missiles: Tomorrow's Threat on Sale Today," ADA Magazine, May-June 96, pg 2.

[3] "Cruise Missiles: the Discriminating Weapon of Choice," Jane's Intelligence Review, February 1997, 87.

[4] Doctor Eliot Cohen, Gulf War Air Power Survey, Volume I: Planning and Command and Control (Washington DC: National Defense University, 1994), 256.

[5] Joint Chiefs of Staff, Doctrine for Joint Theater Missile Defense, Joint Pub 3-01.5 (Washington, DC: 22 Feb 1996), i.

[6] Ibid, I-3.

[7] Department of the Army, Air Defense Operations, FM 44-100 (Washington, DC: 14 June 1993), 1-4.

[8] NWP 10-1.21 and NWP32, quoted in J.P. Gardner, Theater Land Attack Cruise Missile Defense: Guarding the Back Door, (Air Force War College, 1999), pg 73.

[9] Department of the Air Force, Air Force Basic Doctrine, Air Force Doctrine Document 1 (Washington, DC: September 1997), 46-47.

[10] Ibid.

[11] Joint Forces Staff College, The Joint Staff Officer's Guide, JFSC Pub 1 (Norfolk, VA: 2000), D-1.

[12] Ibid.

[13] Joint Pub 3-01.5, xi.

[14] JFSC Pub 1, D-1.

[15] Ibid.

[16] Ibid, D-2.

[17] Joint Pub 3-01.5, vii.

[18] Ibid, x.

[19] Ibid.

[20] Ibid, D-2.

[21] FM 100-5, pg 2-5.

[22] Joint Pub 3-01.5, III-11.

[23] FM100-5, 2-5.

[24] Ibid.

[25] Ibid.

[26] Joint Chiefs of Staff, America's Military-Preparing for Tomorrow, Joint Vision 2020 (Washington DC: 2000), 10.

[27] Joint Pub 3-01.5, I-2.

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